**Basic Helps for Practical Reasoning**

An essential aspect of good writing is good reasoning. When you present your position, you want to be certain that the reader does not dismiss you because of obvious logical inconsistencies. The following schemas of the reasoning process can help you to analyze your own writing and the writing of others.

The reasoning process according to Toulmin

Stephen Toulmin has developed a straightforward diagram of the reasoning process that is easy to understand and apply.

**The first part of the diagram is the "Claim."**

-----------------------------------> Claim

The Claim is a debatable assertion about the nature of things, such as, "Marty and Jane would not be splitting up if Marty had treated her with more respect." This statement is an assertion or an opinion which can be challenged.

**The second part of the diagram is the "Grounds."**

Grounds ----------------------------> Claim

The Grounds is the body of evidence that a person can produce to support the claim. For instance, in our example the Grounds might be, "He never let her finish telling her side of the story without interrupting or shutting her off." This statement is evidence [that Marty did not treat Jane with respect].

**The third part of the diagram is the "Warrant."**

\_\_Warrant\_\_

|  
|

Grounds ---------------------------> Claim

The warrant explains how the Grounds supports the Claim. For example, we might say, "Cutting someone off is a sign of disrespect."

**The fourth part of the diagram is the "Backing."**

\_\_Backing\_\_

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|

\_\_Warrant\_\_

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|

Grounds ---------------------------> Claim

The Backing explains the "givens," i.e., the cultural assumptions or the theoretical basis for the warrant, as in, "Given our tacit understanding that holding the floor is a sign of authority." So far, we have a string of reasoning that sounds like this: "Given our tacit understanding that holding the floor is a sign of authority, cutting someone off is a sign of disrespect. Therefore, when Marty repeatedly cut off Jane, he was showing his disrespect for her. If he had shown her more respect, they would not be splitting up now."

**The fifth part of the diagram is the "Rebuttal."**

\_\_Backing\_\_

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|

\_\_Warrant\_\_

|  
|

Grounds ---------------------------> Claim

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|

\_\_Rebuttal\_\_

The Rebuttal is an "unless" statement: it explains conditions under which the string of reasoning to this point would NOT hold. For instance, the rebuttal in our example might be, "Unless Jane grew up in a family in which it was common for people to cut each other off without giving offense."

**The sixth, and final, part of the diagram is the "Modality."**

\_\_Backing\_\_

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|

\_\_Warrant\_\_

|  
|

Grounds --------------[Modality]-------------> Claim

|  
|

\_\_Rebuttal\_\_

The "Modality" is a word or phrase that indicates the level of belief or certainty the speaker has in the claim, as in, "If Marty had shown Jane more respect, they CERTAINLY would not be splitting up now." Other "Modality" or "Qualifier" phrases include "in my opinion," "without a doubt," "probably," and "perhaps."

The full argument developed in our example, therefore, would be, "[backing] Given our tacit understanding that holding the floor is a sign of authority, [warrant] cutting someone off is a sign of disrespect. Therefore, when [grounds] Marty repeatedly cut off Jane, he was showing his disrespect for her. [claim] If he had shown her more respect, they [modality] certainly would not be splitting up now, [rebuttal] unless, of course, Jane grew up in a family in which people cut each other off all the time without giving offense."

Although Toulmin's model contains these six parts of the reasoning process, this does not mean that all six parts will always be stated explicitly in an argument. Nevertheless, to analyze your own arguments or the arguments of others, you can try to diagram the argument using this pattern. If the argument does not state all of the parts, then you should figure out what those parts would be if they were stated. These unspoken parts of the argument are often taken-for-granted assumptions which may or may not be able to withstand scrutiny.

For a thorough presentation of Toulmin's model, see Stephen Toulmin, Richard Rieke, and Allan Janik, *An Introduction to Reasoning,* MacMillan, 1979.

The Syllogism and Enthymeme

In classical rhetoric, the "Enthymeme" is considered a rhetorical syllogism. These terms are very old, coming down to us from the ancient Greeks. To understand how we use enthymemes to argue our case, we have to understand the basic syllogism.

**The Syllogism**  
To do justice to the syllogism, we would have to take a course in logic. We can't do that here, so let's just look at the basic syllogism. A syllogism is a deductive argument composed of three statements. Deductive (the adjectival form of "deduction") means that the argument starts from a general principle and reasons to the specific instance. (Inductive would mean reasoning from the specific instance to the general principle.)

The first statement of a syllogism is called the Major Premise. It is a broad generalization that associates two categories. The classical example is "All men are mortal." Here the category of men and women is associated with the category of things that die.

The second statement of a syllogism is called the Minor Premise. It associates a single instance with the first of the two categories in the Major Premise: "Socrates is a man." In this statement, a single instance (Socrates) is associated with the first category (men) in the Major Premise.

The third statement of the syllogism is called the Conclusion. It associates the single instance in the Minor Premise with the second category in the Major premise, as in "Therefore, Socrates will die."

Here's the whole thing:

All men are mortal.  
Socrates is a man.  
Therefore, Socrates will die (or is mortal).

There are many variations of the basic syllogism, and there are many principles in logic that help you analyze the truth value and validity of syllogisms. It's a good idea to take a course in logic or practical reasoning if you have a chance.

**The Enthymeme**  
Aristotle said that the Enthymeme is a rhetorical syllogism. A lot of ink has been spilled over the past 2300 years trying to explain exactly what that means. As with the syllogism, we can't do full justice to the concept in this context, but we can describe it briefly.

Most scholars of rhetoric now agree that an enthymeme is a syllogism that leaves out one of the premises. For instance, instead of the full syllogism stated above, an enthymeme would be:

Because Socrates is a man, he will die.

In this instance, the Major Premise of the syllogism is left out, and the Minor premise is put in the form of a subordinate clause. The Conclusion of the syllogism appears as the main clause of this sentence. Enthymemes will not always follow this pattern, but they often do.

Rhetoricians point out that the enthymeme is a powerful form of argument because of the missing premise. Sometimes, an audience will not even notice that the premise is missing and they will give assent to the enthymeme even though they would reject it in its full syllogistic formation (because they would reject the missing premise). In other cases, they subconsciously supply the missing premise from their fund of taken-for-granted truths. When they do that, they are helping to make the argument themselves because they are supplying part of it. As a result, they tend to believe the enthymeme even more fervently because their own assumptions have been woven into it.

A good thing to do with your own writing and the writing of others is to look for enthymemes and then attempt to reconstruct the syllogism on which it is based. We all rely on enthymemes to make arguments: it seems to be part of human nature. It is, therefore, important to scrutinize them carefully in order to avoid making unsubstantiated claims. For more on the enthymeme and syllogism, go to [a discussion of the syllogism and enthymeme at Georgia Tech.](http://www.gatech.edu/lcc/lcc1001/syllogism.html)

The Example

Aristotle said that we argue either by using enthymemes or by using examples. Whereas enthymemes are deductive forms of argument, examples are inductive; that is, they are based on particular instances. If someone says, "That small, green apple is likely to taste sour," she is probably basing the claim on inductive reasoning which relies on several instances of having tasted green apples. In the same way, if you claim the sun will come up tomorrow, your argument is based on many instances in which you have observed the sun rising.

Examples are especially useful in arguments that attempt to establish something about the future. We know what is likely to happen in the future because we compare it with the past. When we draw an example from the past, we often call it a precedent, an instance from the past which is very similar to the one being considered.

If a king wants permission to hire a body guard (an example used by Aristotle), someone might argue that he is trying to become a tyrant in this way.

King James is trying to become a tyrant because he wants permission to hire a body guard. We know that when Alfred hired a body guard, he was preparing to take more power to himself. This is the same situation. Therefore, we should not allow King James to hire a body guard.

We use examples all the time to argue about the future. Should we allow a mall to be built in town? Some would say no because in other towns, malls have caused the down town area to fold up. Should we get involved in an internal conflict in another nation? Some would argue no and liken the situation to Vietnam; others would argue yes by comparing the situation to the 1930s when Hitler was allowed to rise to power because of policies of non-involvement.

You have to be careful when you use examples as arguments because they are easily rebutted. Someone can always claim that the present situation is not like the one you have invoked. You need to be ready to show specific lines of comparison and to show that they are significant.

Authority, Testimony, and Statistics

Quoting an expert (Authority), lining up the testimonies of people who have seen or experienced something, and quoting statistics are all forms of argument which Aristotle called "Inartistic Arguments." Unlike enthymemes and examples, which the writer or speaker makes up for the specific argument out of her own head, these arguments are not created; instead, they are simply used. (Artistic and inartistic, in this context, mean made or unmade.)

**Authority**  
When you read someone's argument, or hear it on television, you should be careful to judge the authority of the experts who are cited. Here are a few questions to consider:

* What are the expert's credential's?
* What is the expert's reputation among various groups?
* Is the expert partisan or biased on this issue?
* Is there reason to believe that his or her judgment is being influenced by allegiances or payments?
* Is the expert an expert on this subject or on some other?
* Does the expert have up-to-date information?
* What kind of reasoning and evidence does the expert supply?

**Testimony**  
Testimony is a strong argument. People testify to what they have seen, heard, and experienced. As with authorities, witnesses may be biased because of payment or allegiance, but if you have already considered that possibility, then you should also consider these questions as well:

* Are there inconsistencies in the story?
* Does the person seem to have the mental capabilities to remember and recount accurately?
* What point of view is the person telling the story from?
* Does the point of view block out some information or color it?
* Is there some reason why the person would be testifying for reasons other than to tell the truth? (for fame, for money, for personal favors, etc.)
* How does the story fit with things that are already known?
* Could the witness have gotten this information through some means other than by direct observation?
* Were there distractions that might have skewed the witness's observation?

**Statistics**  
Statistics carry a lot of weight in our society. They seem to be incontrovertible evidence in support of a position because they carry the aura of scientific accuracy. However, a healthy suspicion of statistic is warranted because of the way some people have used them to mislead the audience. Here are some questions to consider when faced with statistics:

* How much of the methodology is the person revealing?
  + If the statistics come from a survey, do you have access to the questions that were asked? If so, try to think of how the questions might have skewed the responses. It is often the case that people who conduct surveys in order to prove their own biases have crafted the questions in a way that will produce misleading results.
  + How large was the sample? The reliability of statistics increases with the size of the sample. A survey of 500 or 1,000 is more reliable than a survey of 50 or 70.
  + How was the sample selected? If the population surveyed was not selected according to rigorous rules of sampling, the results can be misleading?
  + What percentage of the people surveyed responded? If the survey was mailed out, only a small portion of the recipients will respond, and they often do so because they are in some way not representative of the larger population.
  + What was the level of significance of correlation? Statistics get complicated when we start talking about numbers and specific statistical methods, so it is best to take a course on the subject, but even if you don't understand what the numbers mean, it is important to see if the level of significance is reported. If it isn't, the writer or speaker is asking you to place your faith in him or her without giving you access to important information.
* How recent is the study?
* Who conducted the study?
* Is there reason to believe that whoever conducted the study was trying to produce evidence for a position to which he pays allegiance?
* Are there other statistics which contradict the ones being reported?

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